

WHAT IS CLAIMED IS:

1 1. A system for providing distributed control to process transactions,
2 comprising:
3 a service provider system having associated therewith a plurality of rules and a
4 plurality of meta-rules;
5 a point of service device having associated therewith a plurality of rules and a
6 plurality of meta-rules; and
7 a portable device having associated therewith a plurality of rules and a
8 plurality of meta-rules;
9 wherein the portable device and the point of service device use their associated
10 plurality of rules and plurality of meta-rules to determine an outcome for a transaction; and
11 wherein if the portable device and the point of service device are unable to
12 determine the outcome for the transaction, the point of service device uses its associated
13 plurality of meta-rules to either determine whether one or more of the plurality of rules
14 associated with either the portable device or the point of service device can be altered locally
15 in order to determine the outcome or request the service provider system to help determine
16 the outcome using the plurality of rules and the plurality of meta-rules associated with the
17 service provider system.

1 2. The system of claim 1 further comprising:
2 a network gateway having associated therewith a plurality of rules and a
3 plurality of meta-rules;
4 wherein if the portable device and the point of service device are unable to
5 determine the outcome, the point of service device uses its associated plurality of meta-rules
6 to either determine whether one or more of the plurality of rules associated with either the
7 portable device or the point of service device can be altered locally in order to determine the
8 outcome or request the network gateway to help determine the outcome using the plurality of
9 rules and the plurality of meta-rules associated with the network gateway.

1 3. The system of claim 2 wherein if the network gateway is unable to
2 determine the outcome using its associated plurality of rules, the network gateway uses its
3 associated plurality of meta-rules to either determine whether one or more of its associated
4 plurality of rules can be altered locally in order to determine the outcome or request the

5 service provider system to help determine the outcome using the plurality of rules and the
6 plurality of meta-rules associated with the service provider system.

1 4. The system of claim 1 wherein the point of service device uses
2 historical transaction information to update the plurality of rules and the plurality of meta-
3 rules associated with the portable device in order to render processing of transactions more
4 efficient.

1 5. The system of claim 1 wherein the service provider system uses
2 historical transaction information to update the plurality of rules and the plurality of meta-
3 rules associated respectively with the portable device and the point of service device in order
4 to render processing of transactions more efficient.

1 6. The system of claim 1 wherein the outcome for the transaction
2 includes a price.

1 7. The system of claim 1 wherein the system is implemented using
2 software, hardware or a combination of both.

1 8. The system of claim 1 wherein the portable device includes a smart
2 card, a memory stick, a dongle, a personal digital assistant, a cellular phone and a pager.

1 9. The system of claim 1 wherein the point of service device includes a
2 personal computer, a point of sale device, a kiosk, an automatic teller machine and a cellular
3 phone.

1 10. A system for providing distributed control to process transactions,
2 comprising:
3 a service provider system having associated therewith a plurality of rules and a
4 plurality of meta-rules;
5 a network gateway having associated therewith a plurality of rules and a
6 plurality of meta-rules;
7 a point of service device having associated therewith a plurality of rules and a
8 plurality of meta-rules; and
9 a portable device having associated therewith a plurality of rules and a
10 plurality of meta-rules;

11 wherein the portable device uses its associated plurality of rules to determine
12 an outcome for a transaction; and

13 wherein if the portable device is unable to determine the outcome for the
14 transaction using its associated plurality of rules, the portable device uses its associated
15 plurality of meta-rules to either determine whether one or more of its associated plurality of
16 rules can be altered locally in order to determine the outcome or request the point of service
17 device to help determine the outcome using the plurality of rules and the plurality of meta-
18 rules associated with the point of service device.

1 11. The system of claim 10 wherein if the point of service device is unable
2 to determine the outcome using its associated plurality of rules, the point of service device
3 uses its associated plurality of meta-rules to either determine whether one or more of its
4 associated plurality of rules can be altered locally in order to determine the outcome or
5 request the network gateway to help determine the outcome using the plurality of rules and
6 the plurality of meta-rules associated with the network gateway.

1 12. The system of claim 11 wherein if the network gateway is unable to
2 determine the outcome using its associated plurality of rules, the network gateway uses its
3 associated plurality of meta-rules to either determine whether one or more of its associated
4 plurality of rules can be altered locally in order to determine the outcome or request the
5 service provider system to help determine the outcome using the plurality of rules and the
6 plurality of meta-rules associated with the service provider system.

1 13. The system of claim 10 wherein the point of service device uses
2 historical transaction information to update the plurality of rules and the plurality of meta-
3 rules associated with the portable device in order to render processing of transactions more
4 efficient.

1 14. The system of claim 10 wherein the network gateway uses historical
2 transaction information to update the plurality of rules and the plurality of meta-rules
3 associated respectively with the portable device and the point of service device in order to
4 render processing of transactions more efficient.

1 15. The system of claim 10 wherein the service provider system uses
2 historical transaction information to update the plurality of rules and the plurality of meta-

rules associated respectively with the portable device, the point of service device and the network gateway in order to render processing of transactions more efficient.

16. The system of claim 10 wherein the outcome for the transaction includes a price.

17. The system of claim 10 wherein the system is implemented using software, hardware or a combination of both.

18. The system of claim 10 wherein the portable device includes a smart card, a personal digital assistant, a cellular phone and a pager.

19. The system of claim 10 wherein the point of service device includes a personal computer, a point of sale device, a kiosk, an automatic teller machine and a cellular phone.

20. A system for providing distributed control to process transactions, comprising:

a plurality of service provider systems, each service provider system having associated therewith a plurality of rules and a plurality of meta-rules;

a plurality of point of service devices, each point of service device having associated therewith a plurality of rules and a plurality of meta-rules; and

a plurality of portable devices, each portable device having associated therewith a plurality of rules and a plurality of meta-rules;

wherein a first portable device uses its associated plurality of rules to determine an outcome for a transaction; and

wherein if the first portable device is unable to determine the outcome for the transaction using its associated plurality of rules, the first portable device uses its associated plurality of meta-rules to either determine whether one or more of its associated rules can be altered locally in order to determine the outcome or request a first point of service device to help determine the outcome using the plurality of rules and the plurality of meta-rules associated with the first point of service device.

21. The system of claim 20 wherein if the first point of service device is unable to determine the outcome using its associated plurality of rules, the first point of service device uses its associated plurality of meta-rules to either determine whether one or

4 more of its associated plurality of rules can be altered locally in order to determine the
5 outcome or request a second point of service device or a first service provider system to help
6 determine the outcome using the plurality of rules and the plurality of meta-rules associated
7 respectively with the second point of service device and the first service provider system.

1 22. The system of claim 20 further comprising:
2 a plurality of network gateways, each network gateway having associated
3 therewith a plurality of rules and a plurality of meta-rules;
4 wherein if the first point of service device is unable to determine the outcome
5 using its associated plurality of rules, the first point of service device uses its associated
6 plurality of meta-rules to either determine whether one or more of its associated plurality of
7 rules can be altered locally in order to determine the outcome or request a second point of
8 service device or a first network gateway to help determine the outcome using the plurality of
9 rules and the plurality of meta-rules associated respectively with the second point of service
10 device and the first network gateway.

1 23. The system of claim 22 wherein if the first network gateway is unable
2 to determine the outcome using its associated plurality of rules, the first network gateway
3 uses its associated plurality of meta-rules to either determine whether one or more of its
4 associated plurality of rules can be altered locally in order to determine the outcome or
5 request a second network gateway or a first service provider system to help determine the
6 outcome using the plurality of rules and the plurality of meta-rules associated respectively
7 with the second network gateway and the first service provider system.

1 24. The system of claim 20 wherein the first point of service device uses
2 historical transaction information to update the plurality of rules and the plurality of meta-
3 rules associated respectively with one or more of the plurality of portable devices in order to
4 render processing of transactions more efficient.

1 25. The system of claim 20 wherein a first service provider system uses
2 historical transaction information to update the plurality of rules and the plurality of meta-
3 rules associated respectively with one or more of the plurality of point of service devices and
4 one or more of the plurality of portable devices in order to render processing of transactions
5 more efficient.

1 26. The system of claim 20 wherein the outcome for the transaction
2 includes a price.

1 27. The system of claim 20 wherein the system is implemented using
2 software, hardware or a combination of both.

1 28. The system of claim 20 wherein the plurality of portable devices
2 include a smart card, a personal digital assistant, a cellular phone and a pager.

1 29. The system of claim 20 wherein the plurality of point of service
2 devices include a personal computer, a point of sale device, a kiosk, an automatic teller
3 machine and a cellular phone.

1 30. A system for providing distributed control to process transactions,
2 comprising:

3 a plurality of nodes, each node having a node order and having associated
4 therewith a plurality of rules and a plurality of meta-rules;

5 wherein a first node uses its associated plurality of rules to determine an
6 outcome for a transaction; and

7 wherein if the first node is unable to determine the outcome for the transaction
8 using its associated plurality of rules, the first node uses its associated plurality of meta-rules
9 to either determine whether one or more of its associated plurality of rules can be altered
10 locally in order to determine the outcome or request a second node having a node order that is
11 equal to or higher than that of the first node to help determine the outcome using the plurality
12 of rules and the plurality of meta-rules associated with the second node.

1 31. The system of claim 30 wherein if the second node is unable to
2 determine the outcome using its associated plurality of rules, the second node uses its
3 associated plurality of meta-rules to either determine whether one or more of its associated
4 plurality of rules can be altered locally in order to determine the outcome or request a third
5 node having a node order that is equal to or higher than that of the second node to help
6 determine the outcome using the plurality of rules and the plurality of meta-rules associated
7 with the third node.

1 32. The system of claim 31 wherein the first node includes a portable
2 device, the second node includes a point of service device and the third node includes a
3 service provider system.

1 33. The system of claim 32 wherein the portable device includes a smart
2 card, a personal digital assistant, a cellular phone and a pager.

1 34. The system of claim 32 wherein the point of service device includes a
2 personal computer, a point of sale device, a kiosk, an automatic teller machine and a cellular
3 phone.

1 35. The system of claim 30 wherein the first node uses historical
2 transaction information to update the plurality of rules and the plurality of meta-rules
3 associated with a node having a node order that is equal to or lower than that of the first node
4 in order to render processing of transactions more efficient.

1 36. The system of claim 30 wherein the system is implemented using
2 software, hardware or a combination of both.

1 37. The system of claim 30 wherein the outcome of the transaction
2 includes a price.

1 38. A method for providing distributed control to process transactions,
2 comprising:
3 maintaining a service provider system having associated therewith a plurality
4 of rules and a plurality of meta-rules;
5 maintaining a point of service device having associated therewith a plurality of
6 rules and a plurality of meta-rules;
7 maintaining a portable device having associated therewith a plurality of rules
8 and a plurality of meta-rules;
9 determining an outcome for a transaction using the plurality of rules
10 associated with the portable device; and
11 if the outcome cannot be determined using the plurality of rules associated
12 with the portable device, using the plurality of meta-rules associated with the portable device
13 to either determine whether one or more of the plurality of rules associated with the portable

14 device can be altered locally in order to determine the outcome or request the point of service
15 device to help determine the outcome using the plurality of rules and the plurality of meta-
16 rules associated with the point of service device.

1 39. The method of claim 38 further comprising:
2 if the outcome cannot be determined using the plurality of rules associated
3 with the point of service device, using the plurality of meta-rules associated with the point of
4 service device to either determine whether one or more of the plurality of rules associated
5 with the point of service device can be altered locally in order to determine the outcome or
6 request the service provider system to help determine the outcome using the plurality of rules
7 and the plurality of meta-rules associated with the service provider system.

1 40. The method of claim 38 further comprising:
2 maintaining a network gateway having associated therewith a plurality of rules
3 and a plurality of meta-rules; and
4 if the outcome cannot be determined using the plurality of rules associated
5 with the point of service device, using the plurality of meta-rules associated with the point of
6 service device to either determine whether one or more of the plurality of rules associated
7 with the point of service device can be altered locally in order to determine the outcome or
8 request the network gateway to help determine the outcome using the plurality of rules and
9 the plurality of meta-rules associated with the network gateway.

1 41. The method of claim 40 further comprising:
2 if the outcome cannot be determined using the plurality of rules associated
3 with the network gateway, using the plurality of meta-rules associated with the network
4 gateway to either determine whether one or more of the plurality of rules associated with the
5 network gateway can be altered locally in order to determine the outcome or request the
6 service provider system to help determine the outcome using the plurality of rules and the
7 plurality of meta-rules associated with the service provider system.

1 42. The method of claim 38 further comprising:
2 directing the point of service device to use historical transaction information to
3 update the plurality of rules and the plurality of meta-rules associated with the portable
4 device in order to render processing of transactions more efficient.

1 43. The method of claim 38 further comprising:

2 directing the service provider system to use historical transaction information
3 to update the plurality of rules and the plurality of meta-rules associated respectively with the
4 portable device and the point of service device in order to render processing of transactions
5 more efficient.

1 44. The method of claim 38 wherein the outcome for the transaction
2 includes a price.

1 45. The method of claim 38 wherein the method is implemented using
2 software, hardware or a combination of both.

1 46. A method for providing distributed control to process transactions,
2 comprising:
3 maintaining a plurality of nodes, each node having a node order and having
4 associated therewith a plurality of rules and a plurality of meta-rules;
5 directing a first node to use its associated plurality of rules to determine an
6 outcome for a transaction; and
7 if the first node is unable to determine the outcome for the transaction using its
8 associated plurality of rules, directing the first node to use its associated plurality of meta-
9 rules to either determine whether one or more of its associated plurality of rules can be
10 altered locally in order to determine the outcome or request a second node having a node
11 order that is equal to or higher than that of the first node to help determine the outcome using
12 the plurality of rules and the plurality of meta-rules associated with the second node.

1 47. The method of claim 46 further comprising:
2 if the second node is unable to determine the outcome using its associated
3 plurality of rules, directing the second node to use its associated plurality of meta-rules to
4 either determine whether one or more of its associated plurality of rules can be altered locally
5 in order to determine the outcome or request a third node having a node order that is equal to
6 or higher than that of the second node to help determine the outcome using the plurality of
7 rules and the plurality of meta-rules associated with the third node.

1 48. The method of claim 47 wherein the first node includes a portable
2 device, the second node includes a point of service device and the third node includes a
3 service provider system.

1 49. The method of claim 48 wherein the portable device includes a smart
2 card, a personal digital assistant, a cellular phone and a pager.

1 50. The method of claim 48 wherein the point of service device includes a
2 personal computer, a point of sale device, a kiosk, an automatic teller machine and a cellular
3 phone.

1 51. The method of claim 46 further comprising:
2 directing the first node to use historical transaction information to update the
3 plurality of rules and the plurality of meta-rules associated with a node having a node order
4 that is equal to or lower than that of the first node in order to render processing of
5 transactions more efficient.

1 52. The method of claim 46 wherein the method is implemented using
2 software, hardware or a combination of both.

1 53. The method of claim 46 wherein the outcome of the transaction
2 includes a price.

1 54. The method of claim 46 wherein each node is configured to receive an
2 administrative request; and further comprising:
3 upon a node receiving the administrative request, directing the node to
4 propagate one or more of its associated plurality of rules or meta-rules to another node.

1 55. The method of claim 46 further comprising:
2 directing the first node to collect data relating to the transaction.

1 56. The method of claim 46 wherein the plurality of rules use a plurality of
2 data including transaction and event related data, device related data and environment related
3 data.

1 57. The method of claim 46 wherein the plurality of rules include one or
2 more rules on communications routing between nodes.